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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,646	02/16/2006	Mark Thomas Johnson	NL 031041	4573
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EXAMINER				
CRAWLEY, KEITH L				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/568,646

Applicant(s)

JOHNSON ET AL.

Examiner

KEITH CRAWLEY

Art Unit

4193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF 298)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 recites "a response-changing pulse for changing the ability of the particles to respond to the potential difference". However, the specification and drawings do not clearly describe the term "response-changing pulse" beyond a pulse which "changes the ability of the particles to respond to the potential difference", leaving the term ambiguous and subjective. It would require undue experimentation for one having ordinary skill in the art to use said "response-changing pulse", and for the purpose of examination the term "response-changing pulse" is understood as meaning any possible pulse capable of leaving the position of the charged particles substantially unchanged.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites "a response-changing pulse for changing the ability of the particles to respond to the potential difference". However, the specification and drawings do not provide sufficient disclosure to allow one of ordinary skill in the art at the time the invention was made to unambiguously determine and use said "response-changing pulse", and it is unclear how this pulse specifically changes the ability of the particles to respond. For the purpose of examination this term is understood as meaning any possible pulse capable of leaving the position of the charged particles substantially unchanged.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1, 3, 11, and 12 are rejected under 35 U.S.C. 102(a) as being anticipated by Bert et al., "Passive Matrix Addressing of Electrophoretic Image Display", pg. 251-254, Eurodisplay 2002, hereinafter referred to as "Bert".

Regarding claim 1, Bert discloses an electrophoretic display panel for displaying a picture (fig. 3) comprising a plurality of picture elements, each picture element

comprising two electrodes for receiving a potential difference and charged particles being able to occupy positions between the electrodes (fig. 3, see also pg. 253, section 5), and drive means being able to supply a sequence of potential difference pulses to each picture element (pg. 253, section 5, "driving circuit based on a versatile high-voltage low-power driver IC"), each sequence comprising a response-changing pulse for changing the ability of the particles to respond to the potential difference without substantially changing the position of the particles (fig. 1, also pg. 253, section 3, the AC component provides energy to overcome the forces that act on the particles at the electrode, but without a DC component the reflectivity of the cell is not significantly influenced), and a picture pulse for bringing the particles into one of the positions for displaying the picture (pg. 253, section 3, the DC component provides the driving force for the pigments to migrate from one side to the other), characterized in that, with respect to at least a number of the picture elements (pg. 253, section 4, the passive matrix addressing scheme), the drive means are further able to supply for each picture element out of said number a part of the picture pulse before an end of the response-changing pulse (fig. 2, see also section 4.2, the signal is a combination of AC and DC components, thus a part of the picture (DC) pulse is supplied before the response-changing pulse (AC) is finished).

Regarding claim 3, Bert discloses a display panel as claimed in claim 1 characterized in that the response-changing pulse is a response-increasing pulse for increasing the ability of the particles to respond to the potential difference without substantially

changing the position of the particles (pg. 253, section 3, reaction speed of the cell can be dramatically increased by the addition of a sufficiently strong AC (response-changing pulse) component, see also fig. 1).

Regarding claim 11, Bert discloses a display panel as claimed in claim 1 characterized in that each picture element is one of the number of the picture elements (fig. 2, fig. 3).

Regarding claim 12, Bert discloses a display device comprising the display panel as claimed in claim 1 (fig. 3).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bert in view of Danner et al. (US 7,193,625).

Regarding claims 2, 4, and 5, Bert fails to disclose that the drive means are further able to supply for each picture element out of said number a further response-changing pulse before the part of the picture pulse; the response-increasing pulse is a shaking pulse, the shaking pulse being a sequence of preset potential differences

having preset values and associated preset durations, the preset values in the sequence alternating in sign, each preset potential difference representing a preset energy sufficient to release particles present in one of extreme positions, the extreme positions being positions near the electrodes, from their position but insufficient to enable said particles to reach the other one of the extreme positions; and each sequence of preset potential differences has an even number of preset potential differences.

Danner teaches that the drive means are further able to supply for each picture element out of said number a further response-changing pulse before the part of the picture pulse (col. 14, line 44-46 explains that various combinations of AC modulated pulses discussed throughout col. 13 and 14 can provide a multitude of waveform elements, see also col. 16, line 11-15, more than one AC pulse can be employed within a single waveform); the response-increasing pulse is a shaking pulse, the shaking pulse being a sequence of preset potential differences having preset values and associated preset durations (col. 6, line 44, "alternating current pulse" is the shaking pulse, see fig. 3), the preset values in the sequence alternating in sign (col. 13, line 21-22, "oscillating (AC) electric fields"), each preset potential difference representing a preset energy sufficient to release particles present in one of extreme positions, the extreme positions being positions near the electrodes, from their position but insufficient to enable said particles to reach the other one of the extreme positions (col. 14, line 31-40, "the voltage may be set at a maximum value and the AC frequency varied in order to achieve a greater or lesser reflectivity range", also "the reflectivity typically does not reach either

the extreme black or white optical state"); and each sequence of preset potential differences has an even number of preset potential differences (col. 15, line 42-43, given the general formula: $\text{frequency} = \text{frame rate} / 2n$, the frequency and frame rate can be chose such that the number of preset potential differences will be even).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the display and drive means of Bert with the drive means of Danner since such a modification would produce accurate gray scale rendition in bistable displays (Danner, col. 5, line 36-37), offering significant advantages in graphics capability and image quality (Danner, col. 11, line 53-55).

9. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bert in view of Zehner et al. (US 7,012,600).

Regarding claims 6 and 7, Bert fails to disclose that the drive means are further able to supply for each picture element out of said number the picture pulse to comprise a sequence of sub-picture pulses, each sub-picture pulse having a sub-picture value and an associated sub-picture duration, each sub-picture duration being equal to a predetermined constant; the drive means are further able to supply for each picture element out of said number the sequence of the sub-picture pulses to comprise at least one positive polarity and at least one negative polarity.

Zehner teaches that the drive means are further able to supply for each picture element out of said number the picture pulse to comprise a sequence of sub-picture pulses (col. 10, line 20-27, voltage is applied during selected ones of a plurality of sub-scan periods, see also col. 20, line 33-40, see also col. 21, line 47-51, the impulses "may be part of a sequence of impulses"), each sub-picture pulse having a sub-picture value (col. 10, line 21, "predetermined voltage") and an associated sub-picture duration (col. 10, line 22, "sub-scan periods"), each sub-picture duration being equal to a predetermined constant (col. 10, line 55-56, entries in the look-up table (see col. 6, line 20-40 describing look-up table method) may be determined in advance, see also specific example: col. 22, line 4-5, each sub-picture duration is 10 ms); the drive means are further able to supply for each picture element out of said number the sequence of the sub-picture pulses to comprise at least one positive polarity and at least one negative polarity (col. 14, line 20-34, applying a pulse of reverse polarity in mid-frame). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the display and drive means of Bert with the drive means of Zehner since such a modification would provide accurate gray levels in an electro-optic display (col. 5, line 25-26) designed to accomplish an image transition (col. 21, line 49-50).

Regarding claims 8-10, Bert fails to disclose the drive means are further able to supply for each picture element out of said number a reset pulse prior to both the response-changing pulse and the picture pulse, the reset pulse being able to bring the

particles into one of the extreme positions, the reset pulse representing an energy being at least as large as a reference energy representing an energy to change the position of particles from their present position to one of the extreme positions; the energy of each reset pulse is substantially larger than the reference energy; each reset pulse is able to bring the particles into the extreme position which is closest to the position of the particles for displaying the picture.

Zehner teaches the drive means are further able to supply for each picture element out of said number a reset pulse prior to both the response-changing pulse and the picture pulse (see fig. 9, also col. 3, line 10-17, specifically "reset step (304), see also col. 28, line 19-21, the reset pulse can be either an "erasing pulse" or a "blanking pulse"), the reset pulse being able to bring the particles into one of the extreme positions (col. 26, line 9-11, pixels are driven to their black and white states), the reset pulse representing an energy being at least as large as a reference energy representing an energy to change the position of particles from their present position to one of the extreme positions (col. 28, line 30, "erasing pulse with take the pixel back to the black state", see also col. 30, line 47-52); the energy of each reset pulse is substantially larger than the reference energy (col. 30, line 47-52, duration of the reset pulse can be varied depending on the characteristics of the electro-optic medium used); each reset pulse is able to bring the particles into the extreme position which is closest to the position of the particles for displaying the picture (col. 30, line 10-38, an even or odd number of pulses can be used depending on which extreme position is desired). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

combine the display and drive means of Bert with the reset pulse of Zehner since such a modification is "necessary to ensure accurate gray states during the subsequent writing of an image on the display (col. 26, line 12-14).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Machida et al. (US 6,753,844) discloses an image display device structured with an image display medium, a voltage applying unit and a control unit capable of an initializing drive.

Katase (US 6,762,744) discloses a method for driving an active matrix electrophoretic display comprising a reset voltage.

Gates et al. (6,531,997) discloses novel addressing schemes for controlling bistable electronically addressable displays including pre-pulses for applying a pre-stress to a display element.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH CRAWLEY whose telephone number is (571)270-7616. The examiner can normally be reached on M-F, 7:30-5:00 EST, alternate Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on (571)272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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